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## THE PANAMA CANAL.

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LAST year, when I addressed to the "North American Review" my first article on the project of an interoceanic canal across the Isthmus of Panama, basing my arguments upon the decision of an International Congress of engineers, navigators, and men of science, public opinion in the United States and even in Europe still entertained some doubts touching four highly important points. These were :

1. The supposed insalubrity of the climate of Panama.
2. The possibility of constructing the works needed in order to establish maritime communication at constant sea-level between the two oceans, without either locks or tunnels ; in short, the possibility of carrying out the scheme approved by the Congress of 1879.
3. A reliable estimate of the cost, which could only be determined on the spot by soundings and by taking longitudinal and transverse profiles ; though the Congress, in the absence of the complete data, which were reserved till the execution of the work, had notoriously presented highly exaggerated figures.
4. The supposed opposition of the United States.

It was in order to meet these doubts that I visited America in company with an international committee of engineers, whose duty it was to make a definitive study of the ground with a view to the execution of the work.

These engineers, whose very names are a guarantee of their competence, were :

Mr. Dircks, Engineer-in-chief of the Waterstaat of the Netherlands, who so successfully directed the great work of constructing the canal from Amsterdam to the sea.

The American engineer, Colonel Totten, who constructed the railway from Aspinwall to Panama.

The American engineer, General Wright, at one time engineer-in-chief of an army corps under General Sherman.

Mr. Boutan, Engineer of the Corps des Mines, France.

Mr. Sosa, Engineer-in-chief of the Colombian Government.

Mr. Dauzats, engineer, head of the Central Bureau of Construction of the Suez Canal.

Mr. Blanchet, civil engineer.

Mr. Abel Couvreux, civil engineer. These two engineers are attached to the establishment of Couvreux and Hersent, contractors for all kinds of public works, and well known in connection with the Suez Canal, the regulating of the course of the Danube, the port of Antwerp, etc., etc.

Finally, Mr. Ortega, engineer in the service of the Colombian Government.

This committee had subject to its orders men experienced in the work of making soundings and taking levels. It labored for fifty days on the Isthmus of Panama, and, thanks to the facilities afforded by the railroad, as also to the coöperation of the authorities and the people, it was enabled to complete in that space of time studies which, under different circumstances, would have taken many months.

When these studies were completed a maximum estimate was made of the total cost.

The committee's report is published ; it served as a basis for a contract I directed to be made, on my return to France, with the contractors Couvreux and Hersent, who will form, with the Compagnie Universelle du Canal Interocéanique, a joint-stock association, whose sole profit from the execution of the work will be the difference *minus* between the cost to them and the estimated cost of 500,000,000 francs.

The following is the programme of the contractors so soon as the work on the canal can be commenced :

Length of line of the maritime canal from the Bay of Limon to the anchorage of Flamenco in the Bay of Panama, seventy-three kilometres.

Excavation of soil and rock and removing the bars in the Charges, 75,000,000 cubic metres.

Time required to complete the work, six years, or 1,500 days, reckoning 250 days per year, and 50,000 cubic metres per day, with 8,000 laborers, and the necessary machinery and steam-power.

As for the salubrity of the climate of Panama, whither I accompanied the committee with my family, the perfect health whereof we presented living proof on our return to Europe shows how unjustly that beautiful climate has been condemned by those who knew nothing of it—

Omne ignotum horrendum!

We will now consider the supposed opposition of the United States :

It would be a calumny against the great people of the United States to attribute to them sentiments hostile to an enterprise that will promote their material and moral interests, no less than those of the whole world.

On the contrary, on visiting the principal cities of the United States, I perceived that the public opinion of a country which is ever progressive, and which might well teach our old Europe by precept and example, favors a project whose importance for Americans first, and then for other nations, it fully understands.

Again and again I declared that I was not opposed to any of the projects which have been put forward for cutting through the different American isthmuses ; that the Panama project was the only one which, in my opinion and in the light of my experience with the Suez Canal, would enable us to employ the waters of the two oceans, and not the waters of two rivers flowing down opposite sides of the Cordilleras, in opening to great ships a maritime route between the Atlantic and the Pacific ; that America was at liberty to carry out other projects, but that, if she desired to have a share in that which I am about to execute, one half of the capital would be reserved for her ; that the control of the enterprise will be in the hands of those who shall invest their money in it ; that the Colombian Government, from which I hold the right of way in virtue of a law passed by the Congress of Bogota, had declared in one of the articles of its concession the neutrality of the territory traversed by the canal, and the equal right of transit of the flags of all nations ; and, finally, that the Monroe doctrine, to which I adhere, is in my favor, inasmuch as its sole end was to declare, in 1823, the independence and the sovereignty of the Central and South American republics, which at that time were beginning to liberate themselves from the Spanish yoke.

Under this condition of things where are the difficulties of exe-

cution ? Where is the opposition of a free and independent people, who are bound to respect in others that liberty and independence by which they themselves have so well profited in entering on an uninterrupted course of prosperity and greatness which excites our wonder and prompts to imitation ?

FERD. DE LESSEPS.

PARIS, *May* 19, 1880.